Boronia barrettiorum (*Boronia* subseries *Filicifoliae* : Rutaceae), a new species from the Kimberley Region of north-western Australia

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Abstract

Duretto, M.F. *Boronia barrettiorum* (*Boronia* subseries *Filicifoliae* : Rutaceae), a new species from the Kimberley Region of north-western Australia. *Nuytsia* 16(1): 15–20 (2006). *Boronia barrettiorum* Duretto *sp. nov.* (*Boronia* subseries *Filicifoliae* : Rutaceae) is described and its relationships discussed. Variation in *B. pauciflora* W.Fitz. is also discussed and a key to the species of *Boronia* found in the Kimberley Region is provided.

Introduction

The Kimberley Region of northern Western Australia is a minor centre of endemism for *Boronia*. Wheeler (1992), in the first regional account of the genus, illustrated and gave accounts for four species (*B. filicifolia* A.Cunn. ex Benth., *B. lanuginosa* Endl., *B. pauciflora* W.Fitz. and *B.* sp. A). Wheeler also discussed a number of taxonomic problems. A phenetic analysis of the *B. lanuginosa* species-complex (Duretto 1997) identified two widespread species, *B. lanuginosa* and *B. wilsonii* (F.Muell. ex Benth.) Duretto (both found in the Kimberley Region and the N.T.), as well as three, additional, narrow endemics for the Kimberley Region (*viz. B. jucunda* Duretto [*B.* sp. A], *B. kalumburuensis* Duretto and *B. minutipinna* Duretto). In 1997 a most unusual species was collected from near Kalumburu and described as *B. anomala* Duretto (Duretto 1999). All species of *Boronia* found in the Kimberley Region are placed in *Boronia* section *Valvatae* and, apart from *B. anomala* (which is *incertae sedis* in the section), in *Boronia* subsection *Grandisepalae* series *Lanuginosae* (Duretto 1999). The series contains three subseries, all of which are found in the Kimberley Region: subseries *Lanuginosae* (*B. lanuginosa*, *B. wilsonii*), subseries *Jucundae* (*B. jucunda*, also found in the N.T., with two additional species from the N.T.), and subseries *Filicifoliae* (the remaining four species). *Boronia* subseries *Filicifoliae* was considered to be confined to the Kimberley Region until the collection (in 1999) and formal description (Duretto 2003) of *B. gravicocca* Duretto from the north-west of the Northern Territory. Most species in the Kimberley are narrow endemics on sandstone and known from few collections.

Recent collections from the Prince Regent River area made by Russell and Matt Barrett (Kings Park, Botanic Gardens and Parks Authority, W.A.) have proved to be an undescribed species of *Boronia*. The species is allied to *B. pauciflora* in *Boronia* subseries *Filicifoliae*. The opportunity is taken here to publish a formal description and a detailed account of the species before the forthcoming *Flora of Australia* treatment of the genus.

Taxonomy

Boronia barrettiorum Duretto, *sp. nov.*

A *Boronia pauciflora* W.Fitz. foliis indumento stellato modice denso differt.

Typus: 15 km N of junction of Youwanjela Creek and Prince Regent River, Kimberley Region, Western Australia, 15°36' S 125°29' E, 28 Jan. 1999, *M.D.Barrett* 600 (*holo:* PERTH 06347851; *iso:* HO).

Erect, open *shrub* to 150 cm high; with a moderately dense stellate indumentum throughout, apart from flowers. *Multiangular stellate hairs* sessile, with up to 20 (occasionally more) rays; rays unicellular, unfused, firm, straight, not appressed, glossy, smooth, to 0.5(–1.5) mm long. *Branches* roughly circular in outline, decurrent leaf bases absent, not obviously glandular, hairs evenly distributed around stem, becoming glabrous with age. *Leaves* 1- or 3-foliolate, usually both types present on a given branch though in varying proportions; simple leaves and terminal leaflets longer than lateral leaflets, 10–33 mm long, 4–11.5 mm wide; lateral leaflets 5–19 mm long, 3–7 mm wide; trifoliolate leaves sessile, simple leaves petiolate, petioles and petiolules to 3 mm long; lamina of simple leaves and pinnae ovate to lanceolate to elliptic, acute, attenuate, discolorous, paler beneath, not obviously glandular; margins entire, flat; midrib slightly impressed adaxially, raised abaxially. *Inflorescence* 1(–3)-flowered; peduncle absent; bracts minute; anthopodium (pedicel) 5–25 mm long. *Flowers* white, becoming green with fruit. *Sepals* slightly larger to slightly smaller than petals, narrowly ovate-deltate, acute to acuminate, 2.5–3.75 mm long, 1–1.5 mm wide; adaxial surface with a moderately dense to dense stellate indumentum, becoming glabrous towards base; abaxial surface with a sparse to dense stellate indumentum. *Petals* 2.5–3.5 mm long, 1–1.25 mm wide; adaxial surface with a dense stellate indumentum, becoming glabrous towards base; abaxial surface with a moderately dense stellate indumentum. *Stamens* with filaments bearing stiff simple and bifid hairs abaxially and on margins below glandular tip; anthers glabrous, not apiculate, antepetalous anthers much larger than antesepalous anthers. *Ovary* glabrous; style pilose; stigma rounded, not or scarcely wider than style. *Cocci* glabrous or with a sparse indumentum, 3.5–4.5 mm long, 2.5–3.5 mm wide. *Seeds* shiny, black but mottled, 2.5–3.5 mm long, 1.5–2 mm wide; surface at magnification tuberculate; tuberculae smooth, unfused. (Figure 1)

Other specimens examined. WESTERN AUSTRALIA: Kimberley Region: 15 km N of junction of Youwanjela Creek and Prince Regent River, 15°36' S 125°29' E, 27 Jan. 2000, *M.D.Barrett* 925 (HO, PERTH); 15 km N of King Cascade on Prince Regent River, 15°29' S 125°19' E, 31 Jan. 2000, *M.D.Barrett* 1017 (HO, PERTH).

Distribution. Boronia barrettiorum is known from two populations *c.* 30 km apart and 15 km north of the Prince Regent River (Kimberley Region, W.A.). Additional material has been collected from Enid Falls, *c.* 5 km north-west of the collection locality of *Barrett* 1017 (M. Barrett pers. comm.).

Habitat and ecology. The species is found with *Triodia* spp. and bushy taxa (eg. species of *Ricinocarpos* and *Hibiscus* section *Furcaria*) in fire-protected places between rocks and large boulders on sandstone slopes (collector's notes).

Phenology. Flowering and fruiting material has been collected in January.

Figure 1. *Boronia barrettiorum* Duretto, holotype – *Barrett* 600 (PERTH 06347851) × 0.5.

Conservation status. Collector's notes indicate that known populations of *B. barrettiorum* are small. *Barrett* 1017 and *Barrett* 600 were made from populations of less than 20 plants, and *Barrett* 925 from a population of less than 40 plants. Conservation Codes for Western Australian Flora: Priority Two, given the small population sizes, the small number of known populations and their remote location.

Etymology. The epithet honours botanists Matt and Russell Barrett (Kings Park, Botanic Gardens and Parks Authority, W.A.) who were the first to collect this species. The two have added much to our knowledge of the Kimberley Region through their extensive collections in often remote areas.

Notes. *Boronia barrettiorum* appears to be most closely related to *B. pauciflora* with which it shares simple and ternate leaves. Lacking a rachis could be considered an apomorphy for these species. All other members of *Boronia* subseries *Filicifoliae* have imparipinnate leaves with a large number of small leaflets.

Boronia barrettiorum can be distinguished from *B. pauciflora* by having a moderately dense stellate indumentum on the leaves (*cf.* glabrous or glabrescent), and the hairs being evenly distributed around the young stems (*cf.* hairs, when present, being confined to, or denser in, the area between the decurrent leaf bases).

The eastern collections (*Barrett* 600 & *Barrett* 925) of *B. barrettiorum* have stellate hairs which are much longer (rays to 0.5(–1.5) mm long) than the stellate hairs of the western collection (*Barrett* 1017; rays to 0.1 mm long). When alive, the eastern plants are dark green in colour whereas the western plants are a brighter green (M. Barrett, pers. comm.): this may be due to the presence of the shorter hairs on the western collections.

Boronia pauciflora demonstrates similar variation in hair size. Plants from south of the Prince Regent River, that is from the King Leopold Range (*Byrnes* 2260 - CANB, DNA, PERTH; *Symon* 7037 - HO, PERTH), Mount Broome (*Dureau s.n.* - PERTH 5449065, HO), Edkins Range (*Barrett* 694 - HO, PERTH; *Telford* 11627 - CANB, PERTH), and Camp Creek areas (*Kenneally* 11654 - CANB, PERTH), have small hairs (rays to 0.1 mm long) while the collection from north of the river (*Craven et al.* 9212 - CANB, MEL, PERTH) has large hairs (rays to 1.5 mm long).

This last collection is the only known collection of *B. pauciflora* from north of the Prince Regent River and is also the only collection which has trifoliolate leaves (Duretto 1997). The collection was made only *c.* 20 km from where *Barrett* 1017 (with the short hairs) was collected. Apart from hair length, hair density on the branches also varies in *B. pauciflora*.

All collections have a moderately dense stellate indumentum on the branches except those from the Edkins Range area which are notable in that they have glabrescent branches. Sepal size is also variable. Variation has also been noted in *B. filicifolia* (see Wheeler 1992; Duretto 1997, 1999).

For the time being these differences in hair length *etc.* will not be used as the basis for segregation of additional taxa from *B. barrettiorum* and *B. pauciflora*. Collections from intervening areas and more detailed population surveys are required before these issues can be resolved.

Key to *Boronia* species found in the Kimberley Region, Western Australia

1. Plants glabrous (apart from petals and stamens); leaves 3–5-foliolate; leaflets linear, < 1 mm wide; sepals c. 1.25 mm long, < half the length of the petals ..... **B. anomala**

1: Plants glabrescent or with a sparse to dense indumentum; leaves 1–55-foliolate; leaflet shape various, mostly > 1 mm wide; sepals 3.5–15 mm long, usually > half length of petals **2**

2. Leaves simple or ternate (rachis absent) **3**

2: Leaves 5–55-pinnate (rachis present) **5**

3. Leaflets linear; younger branches glandular tuberculate (also N.T.) ..... **B. jucunda**

3: Leaves or leaflets lanceolate to ovate to elliptic; branches not obviously glandular **4**

4. Leaves glabrescent, 12–80 mm long ..... **B. pauciflora**

4: Leaves with a moderately-dense indumentum [sometimes not clearly visible to the naked eye, though particularly noticeable on new foliage, at least on dry specimens, making them appear white], 8–30 mm long ..... **B. barrettiorum**

5. Leaves with a moderately dense (epidermis visible) to dense (epidermis not visible) stellate indumentum; sepals (4–)5–15 mm long, larger than petals, abaxial surface with a dense indumentum; petals 3–10 mm long; anthopodium 3–6(–10) mm long **6**

5: Leaves glabrescent or with a sparse to moderately dense (epidermis visible) indumentum; sepals 3.5–6 mm long, smaller to slightly larger than petals, abaxial surface glabrous, glabrescent or with a sparse indumentum; petals 2.5–4.5 mm long; anthopodium 1–24 mm long **7**

6. Leaflets linear to narrowly elliptic, so revolute that abaxial surface not usually visible; sepals 5–14 mm long (E of Ord R.; also N.T. & Qld) ..... **B. lanuginosa**

6: Leaflets elliptic to lanceolate, abaxial surface visible; sepals 5–9 mm long (W of Ord R.; also N.T.) ..... **B. wilsonii**

7. Terminal leaflets 1–2 mm long, lateral leaflets 0.5–1.5 mm long; anthopodium 1–6 mm long ..... **B. minutipinna**

7: Terminal leaflets (1.5–)3–11 mm long, lateral leaflets 0.5–5 mm long; anthopodium (2–)6–21 mm long **8**

8. At least some leaves with more than 30 leaflets present, (7–)30–75 mm long; leaflets elliptic to rhombic to circular; petiole 0–2 mm long; sepals 2–3.5 mm long, shorter to longer than petals ..... **B. filicifolia**

8: Leaves with fewer than 30 leaflets (if greater than 30 leaflets then some petioles >3 mm long), 8–40(–56) mm long; petiole 1–7 mm long; leaflets linear to elliptic; sepals 3.5–6 mm long, as long or longer than petals ..... **B. kalumburuensis**

Note: Two simple-leaved taxa, *B. grandisepala* F.Muell. subsp. *grandisepala* and *B. lanceolata* F.Muell., have been collected near the Kimberley Region in the north-west of the Northern Territory, as has the previously mentioned *B. gravicocca*. Keys to separate these taxa from species known to occur in the Kimberley Region can be found in Duretto (1997, 1999, 2003).

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References

Duretto, M.F. (1997). Taxonomic notes on *Boronia* species of north-western Australia, including a revision of the *Boronia lanuginosa* group (*Boronia* section *Valvatae*: Rutaceae). *Nuytsia* 11: 301–346.

Duretto, M.F. (1999). Systematics of *Boronia* section *Valvatae sensu lato* (Rutaceae). *Muelleria* 12: 1–131.

Duretto, M.F. (2003). Notes on *Boronia* (Rutaceae) in eastern and northern Australia. *Muelleria* 17: 19–135.

Wheeler, J.R. (1992). Rutaceae. *In:* J.R. Wheeler, B.L. Rye, B.L. Koch and A.J.G Wilson (eds), "Flora of the Kimberley Region.", pp. 667–675. (Western Australian Herbarium, Department of Conservation and Land Management: Perth.)